LANDSCAPE FEATURES IN THE SĂCĂRÂMB MOUNTAINS

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1. Relief; varied, but accessible

The Săcărâmb Mountains are bounded by the Fornădia Valley in the West, the Geoagiu Valley in the East and the Brad-Crăscior-Balșa depressionary corridor in the North. Although medium high, with summits barely over 1000m (Cetrașu 1080m; Gurguiata 1055m; Haitău 1044m and Pădurea Haitău 1054m), as a division of the Metalliferous Mts, they nevertheless show a great diversity of landforms (Fig. 1).

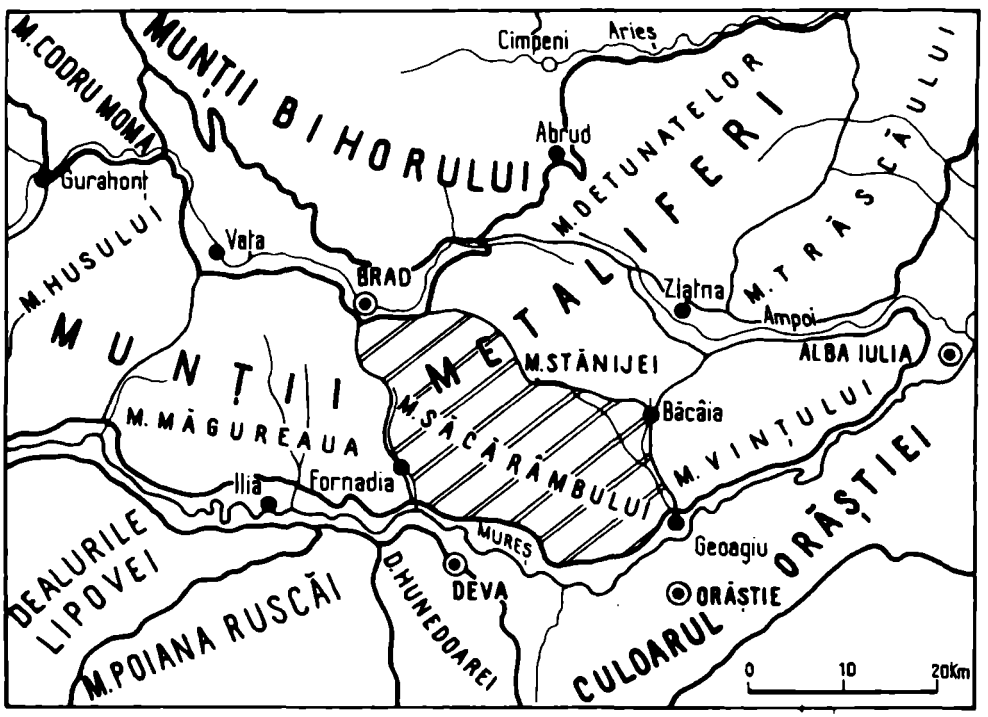

Fig. 1 - The Săcărâmb Mountains and neighbouring units

Specific landforms are the work of the complex mosaic-like geological structure of the Săcărâmb Mts: metamorphic roks, ophiolites, Cretaceous marly Flysch, Miocene sedimentary rocks, Neogene eruptive rocks and a few Mesozoic calcareous Klippes. Rock variety accounts for morphological diversity. The relief was formed by selective denudation and polygenesis, so eruptive bodies appear in the form of hillocks (apophyses, necks) rising above the lava plateaus and the sedimentary formations and Jurassic olistolites at the edge of the Luncoiu-Băiţa-Balşa depressionary corridor, which they had pierced. Besides less prominent hillocks and mamelons, consisting of crystalline rocks (an exhumated relief of the Rapolt Massif), or of Cretaceous and Miocene sedimentary rocks with better denudation-resistant intercalations[1], are visible as well.

The volcanic plate was destroyed by erosion, but during some levelling phases, several rounded surfaces (at altitudes of 800-850m, 700-750m, 630-650m and 520-550m) emerged: Although fragmented, they have not been destroyed altogether. As a matter of fact, it is these rounded surfaces that make these mountains fall into the low-altitude category, or list even under hillocks.

Between 520-550m (the level at which the Mureş corridor lies) and the first, 130m-high, terrace of the Mureş river (at 310-320m abs. alt.) there is a level of 400-450m (best developed and preserved), which slides smoothly into 350-380 m, that is, at 140-160m up against the Mureş channel bed. This level, stretching throughout the Mureş corridor has been assumed to be a piedmont formed, very likely, at the end of the Pleocene and the beginning of the Quaternary (L. Badea, M.Buza, 1990, 1981). This assumption is documented by piedmont depositions on summits South of the Mureş river (L.Badea, M.Buza, A.Jampa, 1987).

The presence of sedimentary rocks, chiefly marly-clay, has facilited the progress of erosion, and quickened the development of slopes (especially through mass movements), and of many depressions connected by large saddles. Some are of tectonic origin, others of contact and other still have resulted from the widening of confluence or source areas. The depressions of Brad, Crescior, Curechiu, Porcurea, Balşa and Ardeu, in the North, form an actual corridor. In the West, one finds enlargements at Luncoiu, Vălişoara and Fornădia (the last one in the Fornădia Valley). In the East, Geoagiu Depression extends toward Hunedoara. The Băiţa-Hondol depressions, in the source area of the Caianul, Certej and Vaca streams, stretching along the valleys by the same name, are by far the larger (Fig. 2). However, irrespective of aspect (mainly hillocks) and despite the string of depressions, together with the remains of rounded surfaces, make the Săcărâmb Mts. very accesible. Since, 700m rounded summits, prevail

[1] A detailed treatment of geomorphological features and landform evolution is made in the same article „Die geomorphologische Merkmale des Săcărâmb-Gebirges", in Studia Universitatis Babeş-Bolyai, Geographia, Teme 37, 1993.

and there is a multitude of depressions, so that circulation becomes easy and conditions for the practice of agriculture are favourable, some applied researchers have advanced the idea that the southern part of the Săcărâmb Mts, and the whole flank of the Metalliferous Mts. facing the Mureş, is not a mountainous area at all, but rather a highly humanized hillock level.

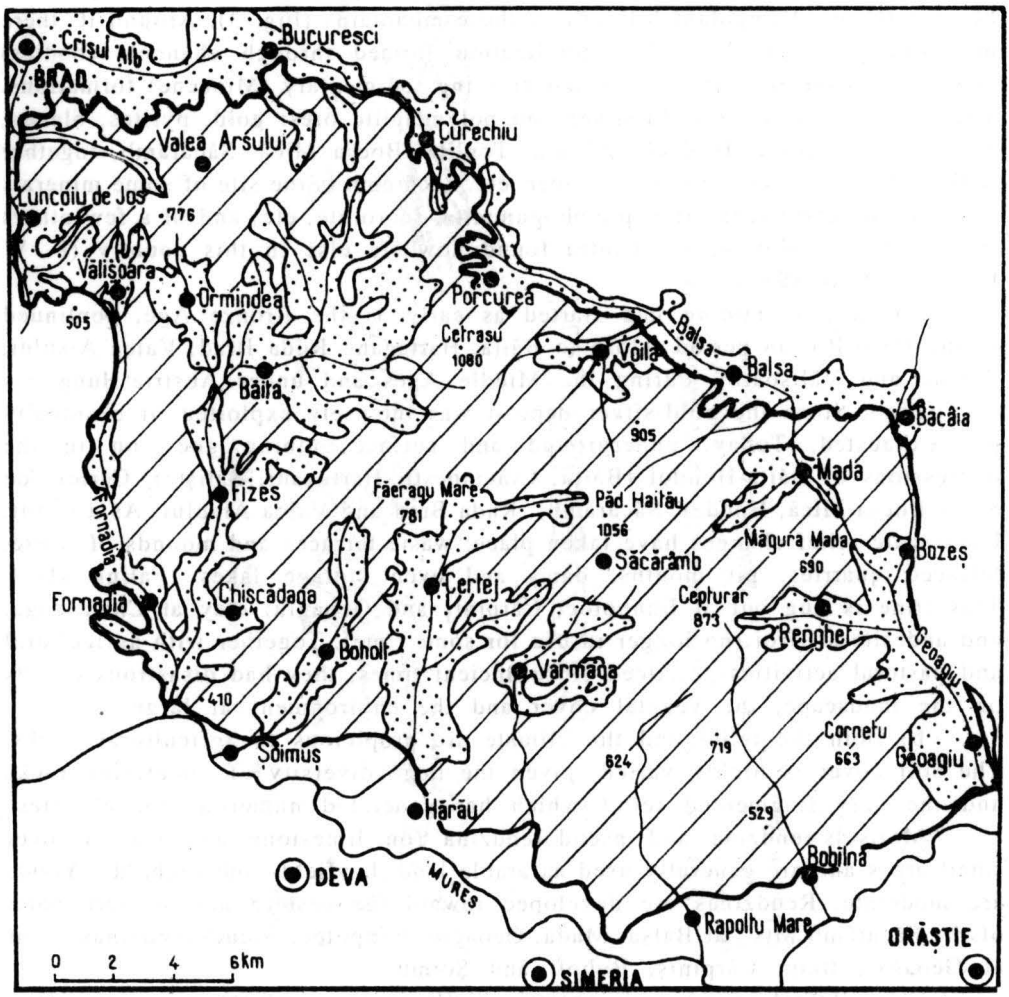

Fig. 2 - Depressionary networc in the Săcărâmb Mountains

2. The area favours wide-ranging, complex activities.

Being very accessible, the area has been inhabited of old. And the host of settlements stretching out from the depressions up to the rounded summits around the eruptive core of the Săcărâmb Mts. stand proof to it. It is this eruptive core which stamps the characteristic features of this unit.

a) Neogene eruptions, with various forms of manifestations-effusive-intrusive-yielded largely andesites with Dacites and rhyolites. A main crater at Săcărâmb has generated a ramified, fan-like structure. Its chimneys have become the most impotant hillocks of these mountains (Fig. 3). Around it, there are zones (or aureoles) of mineralization formed through channels (bodies) originating from the main crater and crossing sedimentary (Miocene) formations. They are evidenced by gold-silver and polymetallic ores: gold, pyrites, blende, galena, marcasite at Hondol, Măgura, Topliţa, Bocşa Mică, Săcărâmb, together with lead, pyrites, calcopyrites, copper, etc. Săcărâmb is the site of some minerals very rare on earth (enkairite, plumbogummite, scorodite, etc) and of a few others (pyrophyllite, rodonite, stibiconte) found nowhere else in this country (P. V. Popescu et al 1971).

Apparently, mining had started as early as the Bronze Age, continued in the Daco-Roman period (close to Băiţa, Hartaganu Ruda Brad, Valea Arsului, Săliste and Vălişoara), during the Middle Ages and under Austria-Hungary's occupation. Since the gold-silver deposit was intensely exploited, it eventually got exhausted. Today, underground and surface mining goes on in the depressions of Băiţa-Hondol (Băiţa, Crăciuneşti, Hartagani, Săliste), Certeju de Sus (Bocşa Mică, Hondol, Săcărâmb), Ruda Brad and Valea Arsului. As a result, large-scale relief changes have taken place: waste terraces and mounds of waste, terraced quarries, pit mouths, dams and even storage lakes (Faling clay). Travertine is dug out at Banpotoc, Cârpiniş and Geoagiu; clay at Chişcădaga, and andesite at Uroi (no longer in use for some time). Together with agricultural and pastoral activities practiced since ancient times, they had disastrous effects on the landscape, the vegetal cover and the environment at large.

b) Both the relief and the climate are propicious to agricultural works. The soil cover is highly varied, given the huge diversity of underlying rocks and the very fragmented relief which has generated numerous topoclimates.

Molisols-rendzina and pseudorendzina (on limestone and marls) cover small areas and are generally used as arable land, hayfields and orchards. Yields are moderate. Rendzinas are developed toward the eastern and western parts of the Săcărâmb Mts., at Balşa, Mada, Geoagiu, Banpotoc; pseudorendzinas occur at Geoagiu, Baiu, Cărpiniş, Boholt and Şoimuş.

Clay-alluvial brown soils extend chiefly in the southern parts, on sunny slops and in small areas. They are used, in the same way as molisols are, and have similar yields. A lot of subtypes are dependent on rock (rendzina-like, pseudo-rendzina-like, rhodic), and on the excess of humidity (pseudogleied

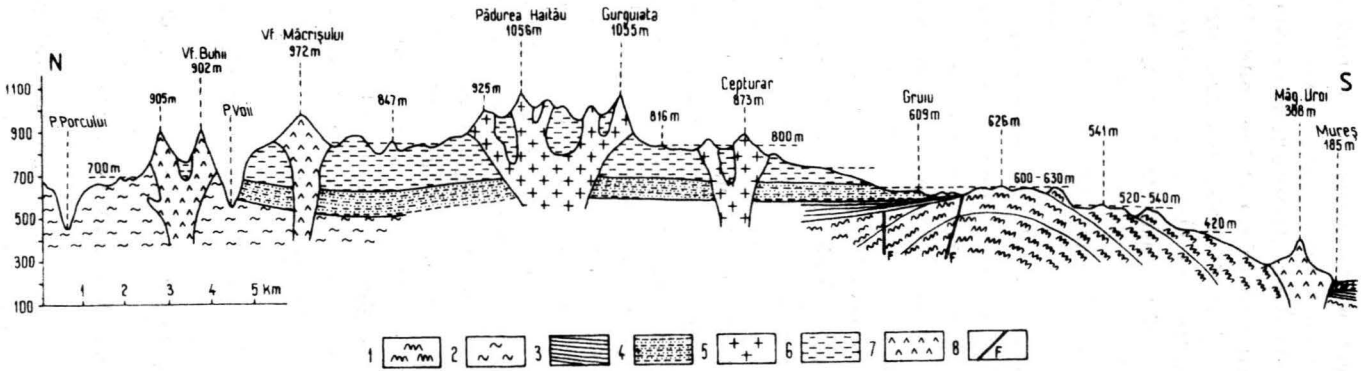

Fig. 3 – North-South cross-section through the Săcărâmb Mountains between Pork Brook and the Mureș River.1, metamorphic rocks; 2, Ophiolites; 3, Cretaceous sedimentary rocks; 4, Miocene sedimentary rocks; 5, andesites, rooted bodies; 6, lava flows; 7, rhyolites, rooted bodies; 8, faults.

soils). They are affected by sheet wash through inappropriate utilization.

Luvic red-brown soils (affected by erosion, excess of humidity and landslides) are found at Renghet, Geoagiu-Băi, Certeju de Sus, Băiţa, Ormidea and Luncoiu. They are low-productive and are used as arable land and hayfields. North of Boholt, Barsău and Geoagiu, in shadded areas, there is a wealth of luvic brown soil (on larger sheetwashed slopes) and albic luvisols (on terraces, in valley source areas, on summits and in small depressions affected by humidity excess).

The class of cumbisols, represented by cumesozoic brown soils, is fairly well extended, especially in the South, on mild, sunny slopes and in the Ormindea and Certej depressions. Several subtypes (on limestones and travertine, marls, basic eruptive rocks), with average yields, are used as arable land, orchards, hayfields and grazes. Red soils are few in the Băiţa-Ormindea depression, at Luncoi, Săcărâmb and Geoagiu-Băi; brown soils are developed on the high summits in the northern half of these mountains and are covered by hayfields and forest. They are lowproductive.

There are fewer umbrisols than other soil types: andosols (at Săcărâmb, Certej, Hondol, Hărţăganu) on basic eruptive rocks covered with meadows and forest; hydromorphic soils, much more extended due to a favourable rocks substrate and morphology (gleied along the major channels; black hayfields at Giugău, Boholt), are connected with the excedent of water from slope springs, which also produces, landslides; pseudogleic soils occur especially in Băiţa Depression, on terraces and in micro-depressions formed on travertine.

In general, it is the non-evolved, trunkated or antropically degraded soils, and their many subtypes that prevail (lithosols, regosols, erodisols, colluvisols). This illustrates that the region is intensely populated (despite a degraded environment) and that the practice of agriculture, forestry and mining is of long standing, with negative effects on the environment.

Mining has produced waste dumps at Luncoiu, Ormindea, Hărţăgani, Câinelu de Sus, Certej, Hondol and Săcărâmb) and floating wastes at Certej and Nojac. Quarry exploitation at Hondol, as well as the mining of limestones, travertine and clay, had severe consequences. Land degradation was accelerated by the construction of the Deva-Brad railway, hence fresh landslides, sinkings and rock and soil falls.

In addition, in the vicinity of the thermal water-springs at Geoagiu, or of mineral springs at Boholt and Băcâia, as wel as in the neighbourhood of floating waste pools (Certej, Nojac) soils have become salinized.

3. A mosaic of forest patches and agricultural plots, completes the mosaic of soils

There is pertinent evidence that the region had suffered a certain anthropic pressure as early as the Antiquity. One can find it particularly in the reduction

of forest land and the degree of soil degradation.

As in any other place, deforestation was faster in the lower, better-levelled areas. In the southern half of the Săcărâmb Mountains, forest patches and agricultural plots hold an almost equal share. Hayfields and grazes prevail, the latter in the northern half. The higher summits and the volcanic hillocks are largely covered with forest, because most of them are less accessible. Densely packed forests cover the central part (North of Certej and Săcărâmb and the south-eastern area (between Varmaga and Bobâlna). But even here man's action has left its mark. Both the soils and the vegetation are obviously degraded, so that melioration and protection messures are urgently needed. The more so, as in this region man has always exploited nature very intensely, and he continues to do it so.

There are 46 settlements in the Săcărâmb Mountains (which stretch along 550sq km). Another 12 stand in the Mureş corridor, at the contact with the mountains, some of them penetrating into the valleys. Other four settlements are found in the north-eastern extremity, along the valleys of Bucuresci and Curechi, the other limit of these mountains. Settlement density runs up to 8/100sq km in the inside zone. If villages from the contact area are added then we have 11/100sq km.

Although people have always been engaged in other activities besides traditional agriculture and minering the population has substantially decreased in the last twenty-five years, given the worsening living conditions. Slight increases have nevertheless been recorded in six settlements only (Şoimuş, Bălata, Geoagiu, Geoagiu Băi and Băiţa), which lie in the extremity of the mountain zone, or in mining sites (Nojag). In some of the villages, one third of the population has dropped out (Balşa, Ardeu, Baziaş, Byway), in others the decrease is put to 40-50% (Stăuini, Mada, Cingău, Stoeneasa) and even Higher (55% at Voia and Săcărâmb; 75% in Bocşa Mare; 87% in Roşia).

The three basic landforms of the region are: the afforested hillocks, the rounded summits with agricultural grounds and the depressions, where very many industrial units have been built. Besides, numerous local relief variants contribute to the great diversity of landscapes (Fig. 4). All relief levels are very accesible, so man was quick in exploiting the wealth of nature far beyond its capacity to regenerate. Hence severe degradation with negative cosequences for the socio-economic life.

Serious protection measures should be taken throughout the Carpathian range, but more especially in the Săcărâmb Mountains, in keeping with specific local realities. Immediate action is needet, because of the great density of population and widely-varied activities.

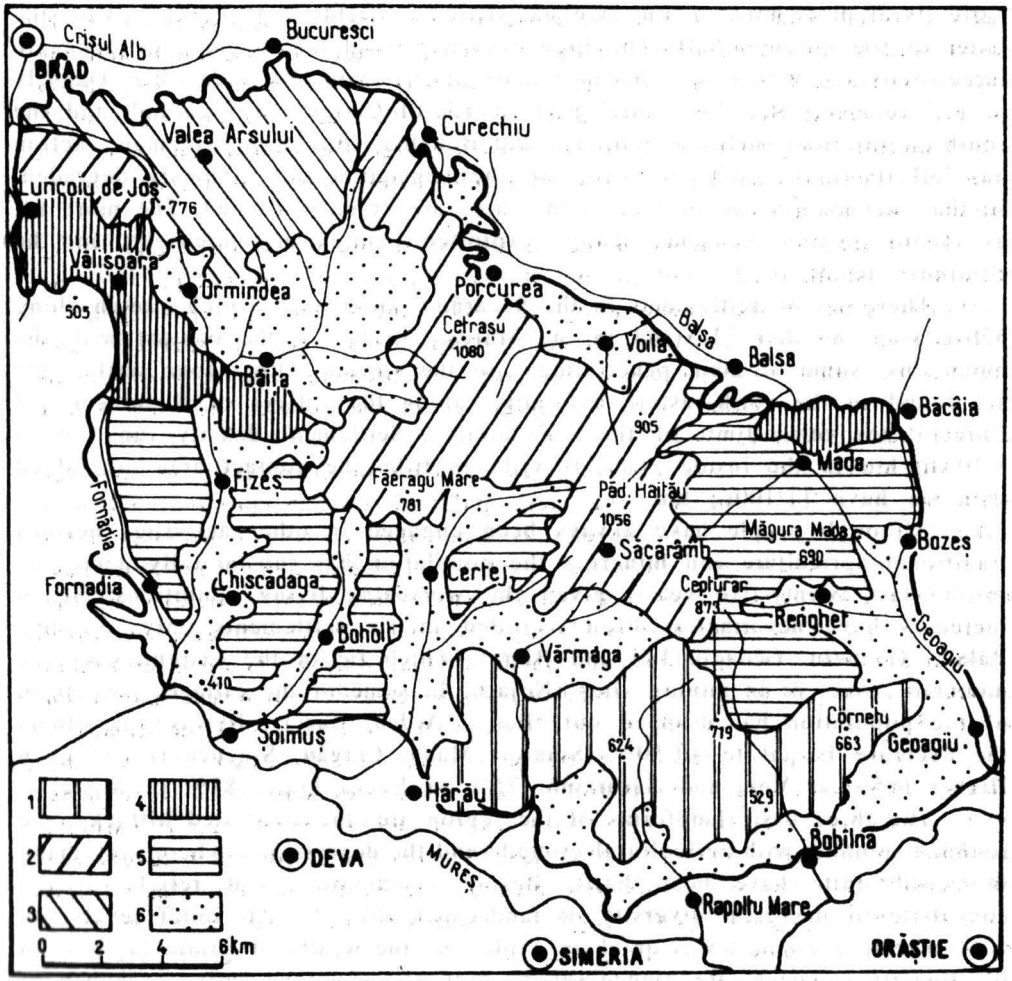

Fig. 4 - Dominant landscapes in the Săcărâmb Mountains 1, Rounded summits divided by narrow valleys cut in crystalline formations, covered with Quercus forests mixed with beech; 3, volcanic summits and plateaus (with small, sparse hillocks) covered with patches of forests and meadows interspersed with agricultural grounds hillocks and low calcareous summits covered with meadows; 4, crops and forest patches; 5, rounded, elongated summits on sedimentary rocks, covered with agricultural grounds (hayfields, grazes, crops), forest patches; settlements.

CARACTERELE PEISAJULUI ÎN MUNŢII SĂCĂRÂMBULUI

REZUMAT

Munţii Săcărâmbului, diviziune a Munţilor Metaliferi, delimitaţi de văile Fornădiei, în vest, Geoagiului, în est şi şirul depresiunilor Brad-Criscior-Balşa, la nord, numai în câteva puncte depăşesc 1000m: Cetraşu, 1080m; Gurguiata, 1055m; Haitău, 1044m; Pădurea Haitău, 1054m. Sunt deci munţi scunzi dar cu un relief foarte variat determinat de un adevărat mozaic petrografic: de la roci metamorfice, ofilite, klipe calcaroase mezozoice, la fliş cretacic, sedimentar miocen şi eruptiv neogen. Eroziunea a pătruns adânc şi selectiv dar succesiunea mai multor faze de eroziune s-a soldat cu formarea a cinci trepte de nivelare (etajate la 800-850, 700-750, 620-650, 520-550, şi 400-450m) ultima trecând într-o treaptă piemontană extinsă în tot culoarul Mureşului.

Culmile netezite, dominate pe alocuri de măguri, lărgirile de vale şi de obârşie legate într-o adevărată reţea şi nu mai puţini versanţii domoli, conferă reliefului accesibilitate şi prin aceasta un potenţial oicumenic şi de utilizare ridicat, în depresiuni şi văi, dar şi pe culmi. Substratul a fost favorabil unei activităţi umane timpurii şi variate.

Erupţiile din regiunea Săcărâmbului au dat naştere la aureole de mineralizare cu zăcăminte auro-argintifere şi polimetalice exploatabile. Exploatările au început în epoca bronzului şi s-au continuat în toate epocile care au urmat. În prezent se efectuează atât subteran cât şi la suprafaţă şi s-au soldat cu un relief antropic foarte variat.

Varietatea petrografică şi morfologică a constituit suportul pentru formarea unui adevărat mozaic de soluri. Accesibilitatea, condiţiile pedo-climatice favorabile, vechimea şi intensitatea locuirii (pe o suprafaţă de 550km² în Munţii Săcărâmbului sunt 46 aşezări la care se adaugă 16 aflate la contact) au facilitat desfăşurarea unei activităţi agricole permanente şi tot mai intense în detrimentul învelişului forestier. Ca urmare a presiunii antropice pădurea s-a redus la suprafeţe mici şi pâlcuri izolate, ocupând de regulă părţile cele mai accidentate. Ca urmare, se poate vorbi de existenţa a trei peisaje de bază – de măguri împădurite, de culmi netezite cu terenuri agricole în parcele şi de depresiuni intens populate cu implantări industriale, dar cu variante locale care prefigurează o foarte mare diversitate. Umanizarea puternică a fost dusă dincolo de limitele capacităţii de rezistenţă şi regenerare ceea ce a dus la apariţia degradărilor.

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